

PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Improvements in or relating to Pneumatic Tyres

We DUNLOP RUBBER COMPANY LIMITED, a British Company of 1, Albany Street, London, N.W.1. do hereby declare the invention, for which we pray that a patent 5 may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to pneumatic tyres. 10 In the conventional pneumatic tyre, the carcass of the tyre is reinforced with a ply or plies of rubberised substantially inextensible cord material, the cords being either of nylon or rayon or of steel and being wrapped at each end of the carcass around a bead wire.

Aircraft tyres manufactured in the conventional manner, however, are now being fitted to aircraft, the gross weights of which and/or the landing speeds of which, are greater than those of earlier comparable types of aircraft to which tyres have previously been fitted. It is necessary, therefore, that the degree of braking required to halt these aircraft upon landing is greater than that 25 required to halt the earlier type aircraft. In consequence of this heavier braking, a considerable amount of heat is generated in the brake drums which is conducted from the brake drums into the bead and lower sidewall regions of the tyres. Cases have been known in which the temperatures of tyres in these regions have been raised so as to exceed the melting point of the rayon and nylon cords used in the carcass plies. When the bead 30 regions of a conventional tyre are subjected to such temperatures, the cords, whether or nylon, rayon or steel, become separated from the surrounding rubber, and the air pressure within the tyre causes the ends of the plies to unwrap themselves from the bead wires resulting in disintegration of the carcass.

It is the object of the present invention to provide a pneumatic tyre which will withstand

high temperature conditions without carcass disintegration.

According to the invention a pneumatic tyre comprises a pair of coaxial bead wires in each bead region, one of said bead wires nesting radially within the other, and the opposed nesting surfaces of the bead wires being complementary, and a reinforcing ply secured in each bead region between the opposed nesting surfaces of the bead wires.

Preferably, the reinforcing ply is of rubberised steel wire cord construction.

Preferably also, the radially inner bead wire is formed from a solid steel wire of cross-sectional area approximately equal to that of a conventional bead wire. The radially inner bead wire extends around the tyre with its ends joined together in abutting relationship e.g. by welding. The radially inner bead wire may, however, be of a rubberised composite wire construction.

Preferably also, the opposed nesting surfaces of the bead wires are complementary frusto-conical surfaces which extend generally in an axial direction.

One embodiment of the invention will now be described, by way of example, with reference to the accompanying drawing which shows an axial cross-sectional view of the right-hand bead region of a pneumatic tyre according to the invention.

An pneumatic tyre 1 reinforced in the tread region with a layer of rubberised parallel steel cord material (not shown) comprises, in each bead region, a solid steel bead wire 2 and a composite coiled wire bead wire 3. The tyre also comprises, in the carcass, a single reinforcement ply 4 of parallel rubberised steel cord material which extends around the tyre from one bead region to the other with the cords disposed at 90° to the mid-circumferential plane of the tyre.

In each bead region the solid steel bead

[Price 4s. 6d.]

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- wire 2 is nested within the bead wire 3. The cross-sectional area of the solid steel bead wire is approximately equal to that of conventional bead wires used in tyres of the same size. The radially outer regions of the solid steel bead wire terminate in a frusto-conical surface 5 which extends generally in an axial direction at an angle of substantially 15° to the axis of rotation of the tyre, with 5
 10 the end of the surface of smaller diameter lying in the axially outermost position. The base 6 of the solid steel bead wire is of rounded form to facilitate the turning of the
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7. A pneumatic tyre according to claim 6
wherein the opposed surfaces are inclined
at an angle of substantially 15° to the axis
of rotation of the tyre.
9. A pneumatic tyre constructed and
arranged substantially as described herein and
shown in the accompanying drawing. 10
- 5 8. A pneumatic tyre according to any of
the preceding claims provided in each bead
region with a chafer reinforcement.

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COMPLETE SPECIFICATION

1 SHEET

*This drawing is a reproduction of
the Original on a reduced scale.*

